What is claimed is:

1. A guidewire, comprising:

a proximal section having a distal end;

a distal section comprising a linear elastic nickel-titanium alloy, the distal section having a proximal end; and

a connector disposed adjacent the distal end of the proximal section and the proximal end of the distal section, the connector adapted and configured for permanently joining the proximal section to the distal section.

2. A guidewire as in claim 1, wherein the proximal section has a first flexibility and the distal section has a second flexibility, and wherein the distal end of the proximal section and the proximal end of the distal section overlap to define a region that blends the first flexibility with the second flexibility.

3. A guidewire as in claim 1, wherein the distal end of the proximal section has a reduced size, and the proximal end of the distal section has a reduced size.

4. A guidewire as in claim 3, wherein the reduced size portions have a uniform profile.

5. A guidewire as in claim 3, wherein the reduced size portions have a taper.

5. A guidewire as in claim 3, wherein the reduced size portions have an interlocking shape.

6. A guidewire as in claim 1, wherein the distal end of the proximal section and the proximal end of the distal section are joined to define a butt joint.

7. A guidewire as in claim 1, wherein the distal end of the proximal section defines a tapered portion and the proximal end of the distal section defines a tapered portion, and the tapered portions at least partially overlap each other.

8. A guidewire as in claim 7, wherein the connector comprises connector material disposed between the tapered portions.

9. A guidewire as in claim 1, wherein the proximal section comprises a metal or metal alloy.

10. A guidewire as in claim 9, wherein the metal or metal alloy comprises stainless steel, nickel-titanium alloy, nickel-chromium alloy, nickel-chromium-iron alloy, cobalt alloy, or combinations thereof.

11. A guidewire as in claim 10, wherein the proximal section comprises stainless steel.

12. A guidewire as in claim 1, wherein the guidewire further includes an outer structure disposed about at least a portion of the distal section.

13. A guidewire as in claim 12, wherein the outer structure comprises a polymer sleeve.

14. A guidewire as in claim 13 wherein the guidewire further includes a flat ribbon attached to the distal section.

15. A guidewire of claim 13, wherein the guidewire further comprises a coil disposed about a portion of the distal section, the coil having a distal portion that extends distally of the distal section.

16. A guidewire of claim 12, wherein the outer structure comprises a first coil disposed about a portion of the distal section.

17. A guidewire of claim 16, wherein the guidewire further includes an inner coil disposed about a portion of the distal section at least partially within the first coil, the inner coil having a distal portion that extends distally of the distal section.

18. The guidewire of claim 17, wherein the inner coil is adapted and configured to be a safety structure.

19. A guidewire as in claim 16, wherein the guidewire further includes a flat ribbon attached to the distal section.

20. A guidewire of claim 1, wherein the connector comprises a metal or a metal alloy.

21. A guidewire of claim 20, wherein the metal or a metal alloy comprises stainless steel, nickel-titanium alloy, nickel-chromium alloy, nickel-chromium-iron alloy, cobalt alloy, nickel, or combinations thereof.

22. A guidewire as in claim 21, wherein the connector comprises a nickel-chromium-iron alloy.

23. A guidewire of claim 1, wherein the connector comprises a polymer or a metal-polymer composite.

24. A guidewire as in claim 1, wherein the connector comprises a tubular member disposed about the distal end of the proximal section and the proximal end of the distal section.

25. A guidewire, comprising:

a proximal section having a distal end, wherein the distal end of the proximal section includes a flexibility transition region;

a distal section comprising a linear-elastic nickel-titanium alloy, the distal section having a proximal end, wherein the proximal end of the distal section includes a flexibility transition region; and

a connector disposed adjacent the distal end of the proximal section and the proximal end of the distal section, the connector adapted and configured for joining the proximal section to the distal section.

26. A guidewire as in claim 25, wherein the proximal section has a first flexibility and the distal section has a second flexibility, and wherein flexibility transition regions overlap to define a region that blends the first flexibility with the second flexibility.

27. A guidewire as in claim 25, wherein the proximal section is comprised of stainless steel.

28. A guidewire as in claim 25, wherein the guidewire further includes a polymer sleeve disposed about a portion of the distal section.

29. A guidewire of claim 28, wherein the guidewire further includes a coil disposed about a portion of the distal section, the coil having a distal portion that extends distally of the distal section.

30. A guidewire of claim 25, wherein the guidewire further includes a first coil disposed about a portion of the distal section.

31. A guidewire of claim 30, wherein the guidewire further includes an inner coil disposed about a portion of the distal section at least partially within the first coil, the inner coil having a distal portion that extends distally of the distal section.

32. The guidewire of claim 31, wherein the inner coil is adapted and configured to be a safety structure.

33. A guidewire as in claim 25, wherein the connector comprises a nickel-chromium-iron alloy tube.

34. A guidewire as in claim 25, wherein at least a portion of the connector is disposed between the flexibility transition regions.

35. A method of manufacturing a guidewire, comprising the steps of:

providing a proximal section having a distal end;

providing a distal section comprising a linear elastic nickel-titanium alloy, the distal section having a proximal end; and

connecting the distal end of the proximal section and the proximal end of the distal section using a the connector adapted and configured for permanently joining the proximal section to the distal section.

36. A method as in claim 35, further comprising the step of forming flexibility transition regions in the distal end of the proximal section and the proximal end of the distal section.

37. A method as in claim 36, wherein the step of forming the flexibility transition regions comprises reducing the size of the proximal and distal ends.

38. A method as in claim 36, wherein the step of connecting the distal end of the proximal section and the proximal end of the distal section includes overlapping the proximal and distal ends.

39. A method of manufacturing a guidewire, comprising the steps of:

providing a proximal section having a distal end, and a flexibility transition region at the distal end;

providing a distal section comprising a linear-elastic nickel-titanium alloy, the distal section having a proximal end, and a flexibility transition region at the proximal end; and

joining the flexibility transition regions.

40. A guidewire, comprising:

a proximal section;

a distal section comprising a linear-elastic nickel-titanium alloy; and

means for joining the proximal section with the distal section.

41. A guidewire as in claim 40, wherein the proximal section has a first flexibility, and the distal section has a second flexibility, and the means for joining includes a means for joining the proximal section with the distal section such that the first flexibility and the second flexibility are blended.

42. A guidewire, comprising:

a proximal section comprising stainless steel;

a distal section comprising a linear-elastic nickel-titanium alloy; and

a connector comprising a nickel-chromium-iron alloy which connects the proximal and distal sections.

43. A guidewire, comprising:

a core wire having a proximal portion and a distal portion;

a coil having a proximal region and a distal region, the proximal region of the coil connected to the distal portion of the core wire, and the distal region of the coil extending distally beyond the distal portion of the core wire; and

a polymer sheath disposed around at least a portion of the core wire and the coil, the polymer sheath extending distally beyond the distal portion of the core wire and the distal region of the coil to form a tip.

44. A guidewire as in claim 43, wherein the coil is adapted and configured to be a safety structure.

45. A guidewire as in claim 43, wherein the coil is a flat wire coil.

46. A guidewire as in claim 43, wherein the distal region of the coil has an first outer diameter, and the proximal region of the coil has an second outer diameter different from the first outer diameter.

47. A guidewire comprising:

a core structure comprising a nickel titanium alloy, the core structure having a distal portion;

a flat wire coil having a proximal region and a distal region, the proximal region of the coil connected to the distal portion of the core wire, and the distal region of the coil extending distally beyond the distal portion of the core wire; and

an outer structure disposed about at least a portion of the distal portion of the core and the flat wire coil.

48. A guidewire as in claim 47, wherein the outer structure is a polymer sheath.

49. A guidewire as in claim 47, wherein the outer structure is an outer coil.

50. A guidewire as in claim 49, wherein the outer coil is a round wire coil.

51. A guidewire as in claim 47, wherein the core structure comprises a linear elastic nickel titanium alloy.

52. A guidewire as in claim 47, wherein the distal region of the coil has an first outer diameter, and the proximal region of the coil has an second outer diameter different from the first outer diameter.

53. A guidewire as in claim 52, wherein the coil has an outer diameter that tapers to become narrower as the coil extends distally.

54. A guidewire, comprising:

a core wire having a proximal section having a distal end, and a distal section having a proximal end and a distal end;

a connector disposed adjacent the distal end of the proximal section and the proximal end of the distal section, the connector adapted and configured for permanently joining the proximal section to the distal section;

an inner coil having a proximal region and a distal region, the proximal region of the coil connected to the distal end of the distal section, and the distal region of the coil extending distally beyond the distal end of the distal section; and

an outer structure disposed about at least a portion of the distal section and the inner coil.

55. A guidewire as in claim 54, wherein the outer structure is a polymer sheath.

56. A guidewire as in claim 55, wherein polymer sheath extends distally beyond the distal region of the coil to form a tip.

57. A guidewire of claim 54, wherein the outer structure is an outer coil.

58. A guidewire as in claim 54, wherein the inner coil is a flat wire coil.